

# Georgy Lukyanov

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## Curriculum Vitae

### Education

- 2017– Present **PhD in EEE**, *Newcastle University*, UK.
- 2015–2017 **M. Sc. in Computer Science**, *Southern Federal University, I. I. Vorovich Institute of Mathematics, Mechanics and Computer Science*, Rostov-on-Don, Russia.
- February – June 2016 **Eramus+ exchange program**, *Vilnius University, Faculty of Mathematics and Informatics, Faculty of Philology*, Vilnius, Lithuania.
- 2011–2015 **B. Sc. in Applied Mathematics and Computer Science**, *Southern Federal University, I. I. Vorovich Institute of Mathematics, Mechanics and Computer Science*, Rostov-on-Don, Russia.

### Research interests

- Programming languages
- Functional programming
- Formal methods
- Effectful programming
- Software development with typed functional languages
- Machine learning

### Publications

1. Language and Hardware Acceleration Backend for Graph Processing / A. Mokhov, A. de Gennaro, G. Tarawneh, J. Wray, G. Lukyanov, S. Mileiko, J. Scott, A. Yakovlev, A. Brown // In proceedings of FDL 2017 conference. – 2017.
2. *Lukyanov G., Pelenitsyn A.* Functional parser of Markdown language based on monad combining and monoidal source stream representation // Accepted for publication in proceedings of the 4th international conference on tools and methods of program analysis. – 2017.
3. Prototyping Resilient Processing Cores in Workcraft / G. Lukyanov, A. de Gennaro, A. Mokhov, P. Stankaitis, M. Rykunov // Accepted for publication in proceedings of the 2nd International Workshop on Resiliency in Embedded Electronic Systems. – SwissTech Convention Center, Lausanne, Switzerland, 2017.

### Master's thesis

Working title *Structuring effectful computation*  
Supervisors Assistant Professor Artem Pelenitsyn

Description The thesis explores the monadic and algebraic effects and handlers frameworks by solving the standard model problem: building a parser combinators library. The work include a comparison of these approaches in terms of expressiveness and, for some of them, performance, and makes observations about their applicability. The side-effect of the thesis is demonstration the usage of the typed functional programming language with an effect system at scale: develop a full-featured effect-structured web application with Haskell.

Keywords Haskell, Frank, computational effects, monads, algebraic effects, effects handlers, parsers

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## Bachelor's thesis

Title *Functional parser of lightweight Markdown markup language based on monad combining and monoidal source stream representation*

Supervisors Assistant Professor Artem Pelenitsyn

Description Parser-combinator library based on monad transformers and monoid-subclasses as a representation of input stream was developed. This library was used to build a lightweight tool for taking lecture notes: parsing Markdown with  $\text{\LaTeX}$ pieces and rendering to HTML. Source code of library and tool is available on [GitHub](#). A prototype of monadic parser-combinators library based on extensible effects was built. Sources also are available on [GitHub](#).

### Selected courses taken

- Quantum Computing (Southern Federal University, 2016)
- Optimizing Compilers Development (Southern Federal University, 2016)
- Cryptography (Vilnius University, 2016)
- Insights into Academic Discourse (Vilnius University, 2016)
- Certified Software Development with Dependent Types in Idris (Southern Federal University, 2014)
- Machine Learning (Southern Federal University, 2015)
- FPGA programming (Computing and microprogramming) (Southern Federal University, 2015)
- Functional Programming in Haskell (Southern Federal University, 2014)
- Supercomputer Technologies (Southern Federal University, 2014)
- Computer Organization (Southern Federal University, 2012)

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## Experience

August **Software Engineer**, Statzilla, Rostov-on-Don.

2015–June Taking part in projects connected with machine learning, statistics and digital signal processing.

2017 Development of web and desktop applications.

Summer **Summer Intern**, Statzilla, Rostov-on-Don.

2015

September– **Teaching assistant**, Southern Federal University, Rostov-on-Don.

December Teaching “Functional Programming in Haskell” labs with occasional lecturing.

2015

May– **C# Developer**, Strob, Rostov-on-Don.  
December 2014 Taking part in development of distributed system for collecting and processing of water meter data. Development of SCADA-like .NET-application.

## Awards

December 2015 First place in data analysis competition “Me and the World in 2030” organized by Centr-Invest bank  
November 2015 Third place in hackathon “47 hours” as a part of team Statzilla for web-based arcade game project  
April 2015 First place in students research competition “Week of Science 2015” of Southern Federal University with project “Functional parser of lightweight Markdown markup language based on monad combining and monoidal source stream representation”

## Computer skills

### Programming languages

*Strong knowledge:* Haskell, C#, R, JavaScript, SQL

*Some experience:* Idris, C, C++, Java, PHP, Bash, Assembly

### Markup Languages

HTML, CSS,  $\text{\LaTeX}$ , Markdown

### Other

*Virtualization:* VirtualBox, Vagrant, Docker

*Operating Systems:* GNU/Linux (Ubuntu) administration, programming with Win32 API

*Version control:* Git

## General skills

### Spoken languages

*English:* C1 according to CEFR, IELTS overall band score: 8.0

*Russian:* native

## Cultural and social activities

2012–2014 **Performer**, *Southern Federal University*, Rostov-on-Don.  
Various cultural activities, being part of creative team of Institute of Mechanics, Mathematics and Computer Science.

- Playing on stage as a part of the performance troupe called “The Fashion Drama”.
- Helping freshmans to get into flow of cultural life of university.
- Being a part of stage service team.

### Awards

2013-2015 Multiple prizes of region-wide creative festival “Russian Students Spring” for performances. As a part of performance troupe “The Fashion Drama”.

## Interests

- Photography Mainly landscape and conceptual. Some photos are available on Flickr and Facebook
- Literature Albert Camus, John Fowles, Stanislaw Lem, Arkady and Boris Strugatsky
- Sports Cycling, Swimming